The Health *of the* British Army, *and the* Effects *of* Recent Sanitary Measures *on its* Mortality *and* Sickness. *By* Dr. Farr, F.R.S.

[Read before Section (F), at Manchester, on Saturday, 7th September, 1861.]

Lord Herbert of Lea, in the prime of life and in the midst of his labours to improve the Health of the British Army, is dead, and his loss has been felt by his countrymen, who justly appreciate the services of their departed statesmen.

The defects which had before been expressed in the lifeless figures of returns struck every heart when they appeared in the thinned ranks before Sebastopol, in the sick-freighted ships of the Black Sea, and in the hospitals of Scutari. From his position, Mr. Herbert felt these defects more poignantly than any of us, and since that time, neglecting the enjoyments which high rank and a splendid fortune placed at his command, he devoted himself to the sanitary reform of the army—first in a Royal Commission, then in commissions for carrying out its recommendations, and, lastly, as Secretary of State for War in Lord Palmerston's administration. Notwithstanding the heavy duties of that office, he continued to act in a Royal Commission; and some of his last recorded words were inquiries into the means of saving the lives of our soldiers who perish in hundreds from the bad sanitary arrangements, rather than from the climate of India.

His frank and winning manner, his knowledge, and his eloquence enabled him to overcome many obstacles; and he had some courageous colleagues, among whom I must name as the foremost Florence Nightingale who shares without diminishing his glory. The difficulties he encountered can only be understood when the history of these years is written. Labour keeps us alive, so I cannot presume to say whether his life was cut short by his harassing work; but Sidney Herbert was animated by the feelings of him in his ancestral line,* who, when he lay on the battle-field fainting and thirsty from the loss of blood, resigned the glass of water to the dying soldier with the words, "Thy necessity is yet greater than "mine." Lord Herbert—I appeal to all who knew him—loved the soldier so well, that for his sake, and to promote the efficiency of the British army, he would willingly have laid down his own life.

Happily before his death he witnessed some of the results of his measures: he learnt the marvellous sanitary success of the China expedition, he received the first annual report of the Director-General of the Medical Department of the Army, showing "a

* Sir Philip Sidney.

"remarkable reduction in the mortality of all classes of troops," and, as a good and faithful servant of the Crown, he received a signal mark of the gracious approbation of his Queen.

Lord Herbert did not think it enough to point out evils in a report; he got commissions of practical men nominated by Lord Panmure, placing himself at their head, to put an end to these evils. The results of one of these commissions are described in a report by Dr. Sutherland, Dr. Burrell, and Captain Galton, and its measures for improving the sanitary condition of barracks and hospitals are so well conceived, that they deserve to be studied by all who take an interest in the health of armies. The sanitary and medical reports of which Dr. Logan and Dr. Mapleton give samples, with the accompanying papers, will every year increase in value. The commission for introducing improvements in the vital statistics of the army, consisting of Lord Herbert, Sir Alexander Tulloch, and myself, laid down an elaborate plan for the observation, record, and analysis of the sickness, diseases, and casualties of the army at home and abroad, in peace and in war. That plan is in operation; and I request your attention to some of the results deducible from the first report.

Under the new system, an exact account is kept of the diseases of every soldier from the day he enters to the day he leaves the army; and the returns are so arranged as to exhibit the diseases of every regiment separately, as well as the amount of disability, invaliding, and death produced by each malady, and, as far as possible, by each conspicuous cause. At the end of every week the Director-General receives from each corps a return of its state and of its changes. The contrast at Aldershot on trial was found to be remarkable in different regiments, and so clearly demonstrates the utility of publication, that I trust this remarkable weekly table will ere long be promulgated. The variable sanitary state of the army is thus brought clearly before the eyes of the Medical Department, the commanding officers, the Commander-in-chief, and the Secretary of State, so that evils, instantly known, can often be suppressed as they arise. The books are now made portable, and so simplified, that they can be kept in the field as well as in barracks.

The annual report is to contain a classification of all the observations of the year, in the nosological form adopted by the Registrar-General. The first report has been prepared, with his wonted ability, by Dr. Balfour, from the old returns partially; and, therefore, presents an incomplete view of the whole subject. But the results, so far as they go, are as interesting as they are important.

The army is not in England a repressive police force: with the gallant volunteers, the militia, and the royal navy, it guards our coasts, protects the empire, and is ready to put forth the great

power of England, should the peace of Europe ever be madly broken. The lives, the industry, the wealth, and the honour of the country are safe under its standards. Friendship with all our neighbours is the desire of the whole nation; but surrounded as we are by great warlike Powers, and by dynasties kept afloat on military glory, the importance of the efficiency of the army cannot be overrated. Now that efficiency depends primarily on the health of the troops; the health being expressed by the relative numbers of healthy, sick, and dying, out of a given strength.

I first request your attention to the state of the army at home. That consists of different arms, and with embodied militia, its strength in 1859 was (omitting commissioned officers) 90,763, including, besides complete corps, detached companies of regiments in India and elsewhere, in what are called depôts; of which the advantages are, to say the least, very equivocal. The army consists of men in the prime of life, between the ages of 20 and 40, very much under control in every respect, but generally unmarried, and living hitherto together in barracks. We contended that, whereas 17 in 1,000 of these men at home had died annually, a body so selected, well fed, well lodged, and well handled, morally and physically—admitting only recruits satisfactory to the examining medical officer, and parting constantly with its invalids—should not experience a higher rate of mortality than that expressed by 8 in 1,000; the rate of mortality actually experienced by the population at the corresponding ages in the healthy districts of England. This result was nearly achieved in the corps at home in 1859. The mortality of the Foot Guards had been 20 per 1,000 (1837-46), and fell to 9; that of the infantry of the line had been 18, and fell to 8; which was also the mortality of the cavalry, the engineers, and the artillery. Some obvious sanitary arrangements were introduced, and instead of being shut up in towns, many of the men were sent to healthy camps: the above are some of the results. The annual deaths among all arms of the service at home had been 17·5; the deaths at Shorncliffe and Aldershot in the three years 1857-58-59, were at the rate of 5 in 1,000.* The previous excess was referable to zymotic diseases, such as fevers, cholera, diarrhœa—and to consumption; the effects of crowding in barracks, of bad ventilation, bad water, bad drainage, badly chosen sites, bad cooking arrangements, and the absence of the means of cleanliness.

The sanitary measures were commenced at home, but in Canada and the North American stations, in the Mediterranean, in the West Indies, in St. Helena, in the Mauritius, and in Ceylon, improvements are observable. India, where we have 80,000 English troops, remains to be dealt with by the India commission.

* "General Report of Barrack and Hospital Commission," p. 12.

The colonies of North America, Australasia, and the Cape of Good Hope, are for British troops genial climates, differing much in their meteorology, however, from England. In Newfoundland, Nova Scotia, New Brunswick, and Canada, where 4,789 troops were stationed, 43 died; and the mortality was at the rate of 9 in 1,000. Comparing the rates of mortality in the ten years, 1837-46, with those of 1859, we have these results: the rate in Newfoundland fell from 11·5 to 4·8; in Nova Scotia and New Brunswick from 16·0 to 7·2; in Canada from 17·4 to 10·4. The proportion of sick was greatly reduced at the same time. Exposure to aguish ground, the bad sanitary state of the towns, excess of spirit drinking, and overcrowding in the barracks, are noted evils in North America. A most successful expedition of troops to found the capital of Columbia was dispatched, and the selection of the site, the food, clothing, employment, instruction, and amusement were excellent; so that out of 150 men only one died, by accidental drowning. The women and children, equally well provided for, were equally healthy. Dr. Seddall gives an interesting account of this model military expedition into a new country.

The sway of the Secretary of State for War extends over the continent of North America—from Newfoundland to Fraser's River and Vancouver's Island, and it also reaches the southern hemisphere, where, in Australia and New Zealand, 2,839 troops were stationed, of whom 26, or 9 in 1,000, died.

At the Cape of Good Hope the average strength was 4,322. The mortality per 1,000 was at the rate of 11 among 3,096 men on the eastern frontiers, 12 among 562 men in Natal, and 32 among 664 in Cape Town. The latter high rate was the result of the introduction of the 59th regiment from China; so if we exclude that regiment, the mortality of the army in the Cape Colony was 12 against 16 in former years. The sickness of the 59th rapidly declined shortly after its arrival at the Cape.

Bermuda—in the Atlantic, lying between Canada and the West Indies—enjoys a delicious climate; yet there, in the year 1843, yellow fever had cut off one-sixth part of the troops serving at St. George's; and the mortality in the years 1837-46 was at the rate of 34 in 1,000. 1,074 troops were stationed on the island in the year 1859, and the deaths were at the rate of 14. The barracks are defective, and half of the force in the summer months was placed under canvas, with most salutary results.

In St. Helena—another small island, but within the tropics—465 men were stationed, and 4 died,—two by accident—the fall of a rock, and of a tree. Two invalids sent home also died. The mortality, exclusive of invalids, which was at the rate of 17 fell to 9 in 1,000. A regimental garden furnishes abundance of vegetables; and

fresh beef or mutton is issued on three days instead of two. The inferior salt beef and pork from the Cape, is to be superseded by better articles from England for the other four days of the week. The relief of the crowded barracks by encamping the men does not appear to have been resorted to: cases of fever and intemperance are noticed.

The Mediterranean stations have an island character, and the temperature is much higher than it is in England. In this sea we have 14,123 troops,—5,153 in Gibraltar, the western gate of the Mediterranean; 5,310 in Malta, interposed between Sicily and the north of Africa, on the way to Egypt; 3,660 in the Ionian Islands, lying against Greece and the opening of the Adriatic. The mortality in Gibraltar, which had been at the rate of 14, was at the rate of 8 in 1,000 in 1859. Malta was as fatal to its garrison as it had been before; 19 in 1,000 died. Out of a strength nearly equal, 40 men died in Gibraltar, and 101 in Malta. The fevers in Gibraltar were apparently increased by over-crowding; and it is worthy of remark that the 25th Regiment, 1st battalion, encamped on the isthmus, had the least number of attacks of continued fever (55 per 1,000), while the 100th regiment, recently raised, suffered in the barracks to the greatest extent (194 per 1,000). The water supply is limited and the drains are defective. But in Malta, continued fever, dysentery, and diarrhœa were much more fatal, as they caused 10 of the 19 deaths per 1,000. The water in the tanks was bad; the barracks were overcrowded; and the heat was excessive in the third quarter of the year, when the epidemic was most fatal. It was not the hot African winds that slew these troops, for the mortality was localized, falling most severely on the Rifle Brigade and on the 2nd battalion of the 23rd Regiment, quartered in the lower part of the fort of St. Elmo, which, almost on the sea-level, is inclosed so as to exclude the breezes. Across the small parade ground in front of the barrack pass the contents of the sewers from the military prisons, accumulate there, and infiltrate the earth in the neighbourhood. Offensive gases escape, and their liberation was facilitated by turning up the earth to lay down gas pipes. The fever raged until the rain began to fall, and cool weather set in.*

In the Ionian Islands also, although the general mortality fell from 18 to 13, fever prevailed in Corfu; so that while of 997 men in Paxo, Santa Maura, Cephalonia, Zante, Ithaca, and Cerigo, only 2 died; out of 2,663 in Corfu and Vido 41 died. The troops are everywhere affected by the sanitary state of the population near which they are stationed; and the sanitary state of Corfu is most defective: the sewage renders the tideless sea putrescent, and sometimes the offal of fifty cattle is thrown in a day into the seething waters from the slaughter-house at Fort Neuf. Now troops are

* See Report, p. 38—39.

stationed in that fort. Little can we wonder, then, that typhoid fever and scarlatina smote the men; so that by the former 16 per 1,000 died in the 2nd battalion of the 4th Regiment. The 2nd battalion of the 2nd Regiment had two companies under canvas at Fort Abraham, and the mortality of the regiment by this disease was at the reduced rate of 5 in 1,000.

Their causes are declared by the zymotic character of the diseases of the force in the Mediterranean: dysentery, diarrhœa, fever (typhoid or typhus), and ophthalmia. The invaliding from the stations is considerable (·008); Malta sent 20 men home with bad eyes.

One of Lord Herbert's last acts in office was to dispatch Dr. Sutherland and Captain Galton to inspect the barracks, where so large a force has hitherto suffered so much; and we heartily wish them success. They may, perhaps, by sanitary teaching in commanding points, throw light on the regions where the rulers spread ignorance and fatalism, fever and plague, around the Mediterranean sea; for those beautiful lands have in them all the elements of abounding health and life.

In the West Indies 3,659 troops were stationed, and the mortality was at the rate of 16 in 1,000; varying from 6 in Barbadoes, 14 in Jamaica, 14 in British Guiana, to 90 in Trinidad, and 20 in the other islands. The coast of tropical America is the native soil of yellow fever; and these islands of the west, extending from the Gulph of Florida to Trinidad at the mouth of the Orinoco, are subject to its visitations, as they are to earthquakes and hurricanes; but by ascending from the fertile alluvial coasts through rich valleys and magnificent forests to the heights of the mountains, we pass into salubrious fields, and breathe under a purer sky. The British troops, therefore, may, either by a happy selection of stations, be so placed as to be in little danger; or, they may be exterminated in bad barracks in the close malarious marshes of the plain. The high mortality of the troops in Trinidad was the result of yellow fever, which was apparently generated in St. James's Barracks, with its faulty drains,—scarcely ever flushed except during the heavy rains. The epidemic ceased when the troops were encamped on the savannah, and it did not spread over the island. A commission was subsequently appointed to select a hill-site; and, if troops are to be kept at all on such an island, the site about 2,200 feet above the sea-level, selected by Dr. Jameson, appears to be the most eligible.

Vegetables are furnished in sufficient abundance everywhere in the command except in St. Lucia; and the commissariat supplies fresh meat on six days, salt beef or salt pork on one day of the week. Formerly salt meat almost exclusively was given, which, by generating thirst, was an incentive to spirit drinking,—that bane of men living a listless life in the tropics.

In the twenty years, 1817-36, owing to evident causes, the mortality of British troops so moderate comparatively in 1859, was dreadful; they died through these long years at the average annual rates per 1,000 of 59 in Barbadoes, of 123 in St. Lucia, of 106 in Trinidad, of 84 in British Guiana, of 61 up to 307 in Jamaica!! At that time the troops in Jamaica "*were almost entirely quartered* "*in the plains*, where the sources of fever abound;" whereas during 1859 three-fourths of them were stationed at Newcastle, on the hills 3,800 feet above the sea, where their mortality was at the rate of 8 in 1,000; while the mortality of the few men retained on the lowlands was still at the rate of 35. This remarkable improvement in the West Indies originated in the army medical reports instituted by Sir James McGrigor in 1816, but first digested by Mr. Marshall, Sir Alexander Tulloch, Dr. Balfour; and it dates back to, and adorns the present Earl Grey's administration of the War Office. Much, however, remains to be done if the present force is to be retained in the islands, or in Guiana on the continent. Ophthalmia and miasmatic diseases will recur unless the whole of the sanitary arrangements are revised and placed on a sound footing.

The tropical island of the Mauritius, over against Madagascar, on the way to the East Indies, is, like Jamaica, mountainous, well irrigated, fertile, and the centre of storms. 1,254 troops stationed there lost twenty men by death; so the mortality was 16 in 1,000, and half of it by miasmatic disease, namely, fever, diarrhœa, and dysentery. The fever portion of this was mainly brought from India; the diarrhœa and dysentery supervened in the 2nd battalion of the 5th regiment on arriving from England. The site of the hospital at Port Louis is objectionable; but the selection of a better depends upon the colonial funds, which we may hope will be forthcoming, if 1,254 of the best British troops are kept there, for, among other reasons, the protection of the islanders.

In Ceylon 913 British troops were stationed in 1859; and the mortality, which in 1837-46 had been at the rate of 42, fell to 32 in that year. This tropical island, covered with verdure, flowers, trees, and the most varied forms of animal life, has a low maritime belt, and a table-land surmounted by lofty summits, down which perennial streams flow—or fall in cascades—through the gorges of the valleys into placid rivers. Yet the diseases—diarrhœa, dysentery, and cholera—imply that the troops get bad water; and they were in fact stationed in great numbers at Trincomalee, and on the peninsula of Colombo, where the water supply is defective. While 76 was the rate at Trincomalee, the mortality at Kandy, 1,467 feet above the sea, was at the rate of 7 in 1,000; and there can be no doubt that by good arrangements the health of the

troops in future years may be sustained at a high standard in this "jewel of the Eastern seas."

We have arrived now on the frontiers of the Indian empire, where more than eighty thousand British troops are distributed over the presidencies and provinces around the Ganges and the Indus. However successful the East India Company may have been in the acquisition of territory and revenue, they did not discover the secret of maintaining in health the European troops in India. The men perished at the rate of 70 in 1,000 annually down to a recent date; and now that their numbers have been so largely augmented, the question has grown in importance. The Secretary of War had no direct control; so the army in India does not figure in the Report. Lord Herbert knew the full importance of the question as well as its difficulties; and by the command of Her Majesty a commission was constituted to inquire and to report on the sanitary improvement of the Indian army. Lord Herbert had served on commissions under administrations of which he was not a member; and with like patriotism Lord Stanley accepted the office of chairman. The sanitary reform of the Indian army Lord Herbert bequeathed, not vainly, I believe, to Her Majesty's Government.

The report, glances at China, and displays the deplorable destruction of our troops at Hong Kong, even in the year 1859. It also records the fact that, in conformity with the New Medical Regulations for Field Service, a sanitary officer was attached to the Quartermaster-General's Department to the expeditionary army, which marched unscathed through an insalubrious country on Pekin; all the wisest sanitary arrangements having been made at home, and efficiently carried out by the medical officers in China in conformity with their instructions. The commanding officers, Sir Hope Grant and Sir Robert Napier,* being men of the highest intelligence, made the new sanitary system an element of military success.

This was Lord Herbert's crowning work.

He left much unfinished abroad; and the army in India is devastated by zymotic disease. So constituted was he that his own short-comings dwelt on his mind. Still a great result had been realized in his lifetime: in England hundreds of lives had been saved; indeed, the numbers of a battalion living in arms at the end of the year 1859 would, at the previous rates, have then lain buried in their graves. Severe sickness also decreased, and the vigour of the whole body of healthier men no doubt increased in proportion.

The Report accounts for a part of the reduction in the mortality by the excess of recruits, and we know that the health of masses

* This distinguished officer, when in England, became acquainted with the sanitary proceedings in England.

fluctuates from year to year. It may go back, and the army may fall into its former unhealthy state, which was held by some people to be quite in the order of nature, as the same diseases had produced the same proportion of deaths from time immemorial. Statistics have been cited in support of the doctrine, that everything occurring successively in equal intervals through long periods of time, being governed by a law, is unalterable. The reasoning, "It has so hap- "pened in my days and my father's, and it cannot happen other- "wise," has thus received an apparent sanction from science. But true science teaches another creed. If the causes remain the same the effects are the same; and it is only when the causes are beyond human control that the effects are inevitable. Now, upon examination it is found that the great causes of the excess of deaths in the army are completely under control in all ordinary circumstances, and as they vary their effects vary, so that if the measures that have been begun, be carried out we have no fear of the result: besides, if the causes of disease be studied—under the new system of observation established by Lord Herbert—new means of guarding the exquisite mechanism of the human frame will undoubtedly be discovered.

The success of this system of observation will depend on the efficiency of the Medical Department; so after re-organizing it on a sound basis, Lord Herbert established a Professorship of Hygiene in the New Army Medical School. In his opening address at Chatham, he dwelt on the advantage of giving the medical officers such a position in the army as would enable them to apply their noble art to the prevention as well as to the cure of disease. He had made Mr. Alexander, who ably seconded all his efforts, Director-General; and, on the death of that fine and devoted officer, nominated Dr. Gibson his successor, who has offered, as the first fruits of his office, the report upon which I have commented.

The evidence before the Royal Commission proved that the health of the British army at home—of the warriors of the nation—was below the national standard; indeed, the deaths were doubled among the troops at home, quadrupled and septupled in the army abroad, including officers. The inefficiency from sickness was equally excessive; so that of *two hundred thousand men* in the estimates, probably more than *fourteen thousand* would be habitually in hospital in time of peace. In war, our armies invincible when in health, were weakened, paralyzed, or destroyed by disease. More than 21 per cent. of the victorious force in the Peninsula were in hospital;* the expeditions in the French war under the Duke of York, the Walcheren expedition, Sir John Moore's retreat, and finally the Crimean disasters, revealed the deplorable imperfections of our

* *Statistical Journal*, vol. xix, p. 247.

sanitary arrangements. The machine broke down precisely when its services were wanted.* With the evils of this rooted system Lord Herbert grappled. Unlike Candide, he did not allow that

* Marlborough possessed that real *elixir vitæ* — the art of preserving a British army in good condition; but it was lost in the eighteenth century; and this as much as the incompetency of the generals was the main cause of our military failures. Sir James McGrigor, in his autobiography, presents us with a type of the British army in the French war. He joined it at Chatham in 1794, and soon embarked for Jersey. His regiment, the Connaught Rangers (88th), infected in Chatham, was "overwhelmed with fever in Jersey," before it saw the enemy; and he, attacked by disease, had barely recovered in the country when he was ordered to embark for Ostend. Several officers and upwards of 100 men were left behind unfit for duty. At Breda fever broke out again, and 200 sick men altogether were under treatment instead of being in the ranks. The other British regiments suffered with not less severity. They were obliged to take chapels and all sorts of places for the sick. Here he saw the Duke of York. Fever again prostrated him; and after a narrow escape from death he embarked for home, convalescent. The fever-soldiers were collected at Norwich. He subsequently embarked for the West Indies. The 56th and other corps *arrived* in this unhealthy climate broken up with fever. Here he got dysentery, which then prevailed among the troops. The terrible yellow fever reduced whole regiments to skeletons. The first question put to an officer on entering the coffee room was, "who has died in "the night?" After returning to England he embarked for the East Indies. "Scarcely a month at Bombay," he says "I accumulated an *hospital full of sick*, "the prevailing diseases being *dysentery* and *hepatitis*." In 1801 he went with the British expedition to Egypt, and there he had a fever, which it was thought would be "plague," by which his regiment was smitten; and he adds, "by the blessing "of Providence alone I escaped." The army suffered also from ophthalmia, and brought the epidemic to England, where it attacked many people. At Windsor, he says "the King, from under a green shade, looked at me; I expressed my regret "to see his Majesty suffering in his eyes. 'Aye, aye!' replied he, 'this is one of "'the fruits of the expedition to Egypt.'" The British army, after it had fought the battle of Corunna (January 14, 1809), was wretchedly crowded in transports and ships of war, and upon its disembarkation filled Portsmouth with fever, which spread to the militia and the surrounding districts. The expedition to Walcheren landed upon that island on August 15th, 1809; on September 23rd, 9,046 men were sick, and after immense losses the remnant of the shattered forces embarked for England. Sir James McGrigor was dispatched to their aid, and this time was not himself disabled. Made chief medical officer under the Duke of Wellington in the Peninsula, he saw the British army attain,—after immense losses by disease and death,—vigour and health before it passed the Pyrenees. The brigade of Guards, cut up by fever and disease, was sent to Oporto, and only rejoined the army after the battle of Vittoria.

The men always fought well, even under the most incapable officers that ever commanded armies. And the terrible necessities of war are necessarily fatal to large numbers; but neither the retreat of Sir John Moore, nor the retreat to Burgos, did a tenth part of the mischief directly resulting from the bad sanitary organization of the British army, which like the late Director-General had its typhus at home—its remittents in the Netherlands—its yellow fevers in the West Indies—its dysenteries in the East Indies—its plague and ophthalmia in Egypt—a mixture of these diseases in Spain—its fevers and dysenteries everywhere in the field. The Crimea was the culminating point; for there 39 per cent. of the force was sick on an average during seven months; and the destruction of life was enormous. A British army in health, under the command of generals of genius, such as the country always produces in small numbers, is irresistible; and as the inefficiency of the army from sickness in its expeditions retarded its triumphs, it added millions to the National Debt. Nothing is so expensive as an unhealthy military force.

he was living in the best of worlds possible. He listened not with a frown, but, as his manner was, with a smile to the antiquated pleas for antiquated abuses. He positively refused to believe in the divinity of the Guards' tub of which a Swift alone might tell the tale—in the foul latrine—in the boiled beef for the soldier's stomach seven days in the week—in the close air of barracks —in the gangrene of hospitals—or in any of the idols which had been heretofore worshipped: all were remorsely questioned, and as many as gave no satisfactory answer will ere long disappear; if they be not preserved in the United Service Museum as dread curiosities, which have, down to this date, destroyed more men in the British army than either the glittering steel, or the flashing artillery of its foes.

In his investigations Lord Herbert availed himself of the latest methods of analysis, and took counsel with scientific men; for he had no conceit, and no pretension to see by intuition what can only be acquired by the labours of a life. His opinions were therefore drawn from experience, and rested upon a scientific basis. In dealing with the soldier he had also another guide. Gentle culture, knowledge, intellect, genius, distinguish men from each other, but Lord Herbert knew that these distinctions did not separate mankind into classes of different natures, for he ever held that the rank and file of the English army were men of like passions with ourselves. He consequently seems always to have applied this test to the past practices, and to proposed plans for their moral as well as their physical improvement: "How should I feel under the same circumstances? "or how would an officer regard such a measure as applied to him?" It was a simple appeal; and to this helm his generous heart ever answered faithfully.

I have thus given you a sketch of the results of some of Lord Herbert's labours.

The worth of many men is known only to their intimate friends, as in the memorable instance of him who is enshrined in the lays of Tennyson. And the value of the measures of some of our greatest statesmen can only be expressed in general terms; but, fortunately, the deeds of Lord Herbert, if they do not dazzle us by their splendour, can be exactly appreciated, and will be expressed in figures as long as the British army shall exist. The debt which the country owes him will accumulate from year to year.

As modest in death as in life, he lies quietly in his tomb at Wilton; and what memorial, either in bronze or in marble, it may be thought right by his friends or his country to dedicate to his memory I do not know; but that which occupied the solicitude of his last hours, and which, I dare affirm, would be dearest to his soul, would be the consummation of the good work, of which it was not given him to say, It is finished: and then his everlasting monument will be a living, healthy army.

APPENDIX.

Comparative View of SICKNESS *and* MORTALITY *of the British Army in* 1837-46 *and in* 1859.

Description.	1859.			Ratio per 1,000 to Strength.				Invalided under the Terms of Completed Service. (Infantry, 21 yrs.) (Cavalry, 24 yrs.)		*Constantly Sick* in Hospital per 1,000.
	Strength.	Admissions.	Deaths. Including the Deaths of Invalids.	1859.		1837-46.				
				Admissions.	Deaths.*	Admissions.	Deaths.	1859.	1837-46.	1859.
1	2	3	4	5	6	7	8	9	10	11
United Kingdom—	Total.	Total.	Total.	p. 1,000.	p. 1,000.	p. 1,000.	p. 1,000.	p. 1,000.	p. 1,000.	p. 1,000.
Household Cavalry ...	1,213	653	10	538	8·24	—	11·09	7·42	14·73	28·70
Dragoon Guards and Dragoons	8,059	7,908	64	981	7·94	962	13·64	14·64	19·87	51·13
Royal Artillery	11,508	14,877	92	1,293	7·99	1,189	13·92	—	—	—
,, Engineers	1,243	1,579	9	1,270	7·24	—	—	—	—	—
Military Train	1,139	1,439	7	1,263	6·14	—	—	—	—	71·82
Foot Guards	5,939	4,701	54	791	9·09	862	20·43	19·87	17·17	51·76
Infantry regiments ...	19,621	18,915	149	964	7·59	1,044	17·89	10·41	—	50·91
Depôt battalions	22,993	26,421	311	1,148	13·52	—	—	—	—	—
MILITIA	19,048	17,483	119	918	6·27	—	—	—	—	—
Mediterranean Stations—										
Gibraltar	5,153	4,889	40	949	7·76	939	13·58	10·48	—	46·90
Malta	5,310	6,446	101	1,214	19·02	1,120	19·36	8·29	—	51·81
Ionian Islands.....	3,660	3,225	46	881	12·57	1,139	17·94	4·64	—	44·46
North American Stations—										
Bermuda	1,074	577	15	537	13·95	1,187	33·79	4·65	12·3	35·11
Nova Scotia and New Brunswick	1,798	1,003	13	558	7·23	900	16·00	7·23	14·1	22·39
Canada.....	2,782	1,516	29	545	10·42	982	17·42	7·91	15·2	28·27
Newfoundland	209	278	1	1,330	4·8	781	11·54	43·01	48·3	37·10
British Columbia	150	85	1	814	6·67	—	—	—	—	—
West Indian Stations—										
Jamaica	624	833	9	1,335	14·42	—	61 to 30·7†	4·8	—	58·08
West Indies—										
Barbadoes	786	826	5	1,051	6·36	—	58·5†	4·9	—	49·38
St. Lucia.....	96	113	—	1,177	—	—	122·8†			
Trinidad	190	276	17	1,453	89·53	—	106·3†			
British Guiana.....	143	156	2	1,091	13·98	—	84·0†			

* In comparing the mortality of 1859 with that of previous years, Dr. Balfour has, in some cases, made corrections for difference of age. (See "Report.")

† Average annual mortality in the twenty years, 1817 to 1836.

Comparative View of SICKNESS *and* MORTALITY *of the British Army—Contd.*

Description.	1859.			Ratio per 1,000 to Strength.				Invalided under the Terms of Completed Service. (Infantry, 21 yrs.) (Cavalry, 24 yrs.)		*Constantly Sick* in Hospital per 1,000.
	Strength.	Admissions.	Deaths. Including the Deaths of Invalids.	1859.		1837-46.				
				Admissions.	Deaths.*	Admissions.	Deaths.	1859.	1837-46.	1859.
1	2	3	4	5	6	7	8	9	10	11
	Total.	Total.	Total.	p. 1,000.	p. 1,000.	p. 1,000.	p. 1,000.	p. 1.000.	p. 1,000.	p. 1,000.
Southern Stations—										
St. Helena	465	373	6	802	12·90	943	16·62	—	—	36·23
Cape of Good Hope—										
Cape Town	664	1,286	21	1,937†	31·6†	} 945	16·54	—	—	—
Natal	562	513	7	913	12·41					
Eastern frontiers	3,096	2,858	35	923	11·30					
Australasian Stations—										
Australia	1,380	913	16	662	11·6	—	—	} 9·86	—	—
Tasmania	{ 262 / 334 }	139	5	531	15·0	732‡	11·87‡			
New Zealand	1,125	716	5	636	4·5	518 §	11·61§			
China	1,550	4,314	92	2,783	59·35	—	—	—	—	129·35
Mauritius	1,254	1,540	20	1,237	16·04	910‖	22·38‖	8·0	—	48·76
Ceylon	913	1,546	32	1,693	35·1	1,444	41·74	—	—	70·14

* In comparing the mortality of 1859 with that of previous years, Dr. Balfour has, in some cases, made corrections for difference of age. (See "Report.")

† The very high rate of mortality and of admissions into hospital in *Cape Town Station*, is accounted for by the fact that the 59th regiment which had broken down by disease in China, was sent to Cape Town on the 19th January, 1859, from which date till the end of the year it furnished 1,096 admissions and 18 deaths out of an average strength of 641 men.

‡ For the years 1839-55. § Ibid., 1846-55. ‖ Ibid., 1838-54.

Mortality amongst the Native Troops in the British Army in the Year 1859.

Stations.	Strength.	Admissions.	Deaths.	Ratio per 1,000 to Strength.	
				Admissions.	Deaths.
				per 1,000.	per 1,000.
Jamaica	807	1,034	25	1,281	30·95
Barbadoes	754	766	12	1,016	15·9
St. Lucia	103	95	1	922	9·7
Trinidad	102	78	6	765	58·8
British Guiana	301	337	2	1,120	6·6
Honduras	322	274	2	851	6·2
Bahamas	322	268	13	832	40·3
Sierra Leone	356	193	5	542	14·02
Gambia	314	205	8	653	25·44
Gold Coast	279	162	7	581	25·06
Ceylon	1,564	1,133	16	724	10·19
China	2,009	3,283	109	1,634	53·7